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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,087	11/18/2003	Scott Alexander Billington	09997.105001	4852

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EXAMINER	
ALSOMIRI, ISAM A	

ART UNIT	PAPER NUMBER
3662	

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/716,087	BILLINGTON ET AL.	
	Examiner	Art Unit	
	Isam A Alsomiri	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed "pair of detectors" (claims 1-20) is not described in the specification. As best understood by the examiner the pair of detectors which is claimed is referring to extracting (detecting) the in-phase and the quadrature components.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Locke 5,406,842. Referring to claims 1 and 8, Locke discloses in figure 3 a system for obtaining a

distance to a target by use of a sensing system comprising a signal source 8, an antenna 2, and at least a pair of detectors (in-phase, and quadrature) (see Abstract), comprising the steps of: (a) transmitting a plurality of transmit signals for transmission via the antenna and a plurality of corresponding reference signals (mixer 10, mixing Tx and Rx) for distribution to the at least pair of detectors in response to sweeping in selected frequency increments a frequency band of the signal source (see Abstract, col. 4 lines 16-23); (b) receiving a plurality of received signals 19 via the antenna 2, each received signal representing a reflection of one of the transmit signals off of the target; (c) identifying a rate of change of phase between the reference signals and the received signals as detected by the at least pair of detectors; and (d) calculating the distance to the target based on the rate of change of phase as a function of frequency between the reference signals and the received signals (see col. 4 lines 44-55).

Referring to claims 2 and 9, Locke teaches the at least pair of detectors are offset in phase (in-phase and quadrature) (see Abstract).

Referring to claims 3 and 10, Locke teaches the frequency band comprises the stopband of the antenna (see col. 3 lines 48-52) and the target comprises the antenna (see col. 4 lines 30-34).

Referring to claims 4 and 11, Locke teaches the frequency band comprises the passband of the antenna (see col. 3 lines 48-52), the target comprises an item within the operating environment of the sensing system (see figure 3 [14]), and the distance to the target comprises a distance between the item and the signal source (inherent, see Abstract).

Referring to claims 5 and 12, Locke discloses in figure 3, a propagation medium connects the signal source 8 to the antenna, the frequency band comprises the stopband of the

antenna (see col. 3 lines 48-52), the target comprises the antenna (see col. 4 lines 30-34), and the distance to the target comprises the length of the propagation medium (the delay line of a known length; therefore it's inherent that a measurement must be made to determine the "known length" which is by detecting the back reflection from the antenna) (see Abstract).

Referring to claim 6, Locke discloses in figure 3 a sensing system including calibrating the sensing system by: inherently determining/measuring the length of the propagation medium (see Abstract) which inherently reads on (i) performing steps (a), (b), (c) and (d) to complete a first calibration measurement, wherein a propagation medium connects the signal source 8 to the antenna 2, the frequency band comprises the stopband of the antenna (see col. 3 lines 48-52), the target comprises the antenna 2, and the distance to the target comprises the length of the propagation medium (delay line); (ii) performing steps (a), (b), (c) and (d) to complete a second calibration measurement, wherein the frequency band comprises the passband of the antenna (see col. 3 lines 48-52), the target comprises an item 14 within the operating environment of the sensing system, and the distance to the target comprises a distance between the item and the signal source, and completing steps; and (iii) subtracting the first calibration measurement from the second calibration measurement, thereby removing environmental effects associated with the propagation medium from operation of the sensing system (see Abstract).

Referring to claims 7 and 14, it's inherent to repeating steps (i), (ii) and (iii) at predetermined times during operation of the sensing system to maintain calibrated operation of the sensing system.

Referring to claim 13, Locke discloses in figure 3 calibrating a phase-based radar system useful for obtaining a distance to a target 14, the phase-based radar system comprising a signal source 8, an antenna 2 and at least a pair of detectors (in-phase, quadrature), comprising the steps of:

(a) identifying a length of a propagation medium to the antenna by (delay line of a known length): (the known length is inherently measured or detected by) transmitting a plurality of transmit signal to the antenna 2 via the propagation medium and a plurality of corresponding reference signals for detection by the at least pair of detectors in response to sweeping in selected frequency increments the signal source within a stopband of the antenna (see Abstract), receiving a plurality of received signals from the antenna via the propagation medium, each of the received signals representing a reflection of one of the transmit signals off of the antenna 2. determining a rate of change of phase between the reference signals and the received signals as detected by the at least pair of detectors, and calculating a distance from the signal source to the antenna based on the rate of change of phase as a function of frequency between the reference signals and the received signals (the steps of determining the delay signal is inherently by calculating the back reflection from the antenna, the processing of the back reflection is inherently similar to the processing of the return signals from the wanted target which include measuring the rate of change of phase and determining the distance from it (see col. 4 lines 44-55);

(b) identifying the distance to the target by: transmitting a plurality of transmit signals to the antenna 2 via the propagation medium and a plurality of corresponding reference signals for detection by the at least pair of detectors in response to sweeping in selected frequency increments (see Abstract) the signal source within a passband of the antenna (see col. 3 lines 48-

52), receiving a plurality of received signals 19 from the antenna via the propagation medium, each of the received signals representing a reflection of one of the transmit signals off of the target 14, determining a rate of change of phase between the reference signals and the received signals as detected by the at least pair of detectors, and calculating the distance to the target based on the rate of change of phase as a function of frequency between the reference signals and the received signals (see col. 4 lines 43-55); (c) completing a calibration of the phase-based radar system by correcting (subtracting) the length (known measured length) of the propagation medium from the distance to the target to obtain a distance between the antenna and the target (see Abstract).

Allowable Subject Matter

Claims 16-17, 19-20 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 15 and 18 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited to (McEwan; Justice et al.; Jean et al.; Neidell; Fremouw et al.) show various radar system form measuring a distance to a target including calibration means.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isam A Alsomiri whose telephone number is 703-305-5702. The examiner can normally be reached on Monday-Thursday and every other Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isam Alsomiri

JOHN B. SOTOMAYOR
PRIMARY EXAMINER

April 13, 2004